The influence of anticipated weight stigma and weight bias internalization on eating, exercise, and quality of life among obese women

Research Thesis

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by

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Introduction

With nearly 70% of adults considered obese or overweight, contributing to $150 billion in yearly health-related expenses and 300,000 annual deaths, obesity is a major problem in the US (Flegal, Carroll, Kit, & Ogden, 2012). The physical effects of obesity are of high concern for public health (Flegal et al., 2012). However, obesity is not limited to physical health symptoms, and has been associated with many psychosocial factors including weight stigma. The negative way society treats and perceives obese individuals has been associated with harmful effects, reflected in decreased quality of life (QOL) and poor dieting habits (Puhl & Brownell, 2006; Puhl & Heuer, 2009; Puhl, Moss-Racusin, Schwartz, & Brownell, 2008).

Stigma is a social process in which a negative attribute is associated with an individual's social identity (Crocker, Major, & Steele, 1998). Obese individuals experience weight related stigma, or stereotyping, in many settings (Puhl & Heuer, 2009). When pertaining to weight, overweight and obese individuals in western society are characterized as unmotivated, lacking self-discipline, sloppy, lazy, and unintelligent (Puhl & Heuer, 2009; Puhl et al., 2008). Weight stigmatization, in turn, has negative effects on health behavior of stigmatized individuals, including less control over diet (Major, Hunger, Bunyan, & Miller, 2013), less motivation to exercise (Vartanian & Shaprow, 2008), and negative effects on psychological well-being (Puhl & Heuer, 2009). Thus, obese individuals who experience stigma may be less likely to achieve a healthy weight as a result of negative health behaviors associated with weight-related stigmatization. Unfortunately, efforts to reduce or minimize the effects of stigma have

been equivocal (Puhl & Brownell, 2003). To date, the majority of research has focused on the direct experience of being stigmatized (i.e., the degree to which an individual reports encountering stigmatizing experiences). However this conceptualization may not fully capture the negative effects obese individuals endure. Examination of more nuanced, recently identified types of stigma, including anticipated weight stigma and weight bias internalization, may facilitate a better understanding of the negative impact of weight-related stigma.

Anticipated weight stigma reflects an individual's belief that stereotyping, discrimination, and prejudice will be encountered in the future (Earnshaw , Quinn, & Park, 2012; Earnshaw, Quinn, Kalichman, & Park, 2013). Anticipated stigma is associated with negative consequences such as decreased QOL, even among those who have not experienced enacted stigma (Earnshaw et al., 2012; Earnshaw et al., 2013). In addition to anticipating stigma, individuals eventually accept or endorse the negative attributes ascribed to them (Pearl, Puhl, & Dovidio, 2014). This is known as weight bias internalization, and it is associated with decreased exercise self-efficacy and motivation to exercise (Pearl et al., 2014; Vartanian & Novak, 2011). Weight bias internalization has also been shown to exacerbate the relationship between experienced weight stigma and a refusal to diet (Puhl, Moss-Racusin, & Schwartz, 2007). Further, slightly obese individuals reporting weight bias internalization indicated greater declines in overall health over a 10 year span when compared to more severe obese participants who did not report weight bias internalization (Schafer & Ferraro, 2011). Thus, these more specific types of stigma reflect additional possible sources of stress/harm among obese individuals. However, as these concepts have only recently been defined in the literature,

more research is needed to better understand the role of each type of stigma and their effects on health and well-being among obese individuals. No prior study has examined anticipated weight stigma and internalized weight bias together in a single sample of obese individuals. This study will extend the data on weight bias in obesity and will fill a gap in the present literature. Exploring these different types of stigma within the same sample of obese individuals will help elucidate the degree to which specific types of stigma are associated with negative health outcomes. In the long run, expanded knowledge of the interrelationships of stigma and health may lead to opportunities for intervention that can reduce the deleterious effects of various types of stigma among obese individuals.

The goal of the proposed study is to explore how anticipated weight stigma and weight bias internalization are associated with health and well-being among obese individuals, as these are areas commonly disrupted by stigma processes, and to evaluate the unique effects of these two types of stigma above and beyond experienced stigma. More specifically, this study will explore the interrelations between each type of stigma and exercise self-efficacy, eating self-efficacy, and measures of both health-related and weight-related quality of life. It is hypothesized that (1) experienced weight stigma, anticipated weight stigma, and weight bias internalization will be negatively associated with exercise self-efficacy, eating self-efficacy, and quality of life (QOL). In addition, (2) the relationship of anticipated weight stigma and weight bias internalization with exercise self-efficacy, eating self-efficacy, and QOL will remain significant when controlling for the effects of experienced weight stigma.

Method

Participants

Data for this cross-sectional study were collected as part of a larger trial evaluating a dissonance-based 4-week body image intervention among adult, obese women (n=44) attempting weight loss. Participants completed a one-hour battery of questionnaires at the baseline assessment evaluating eating patterns, exercise, QOL, weight stigma, anticipated weight stigma, and weight bias internalization. Demographic information, height, and weight were collected at baseline as well.

Obese or overweight women interested in losing weight were recruited from the Columbus metropolitan community. Flyers posted in the community and Researchmatch, an NIH-funded website that targets eligible participants, were used to recruit participants.

Inclusion criteria required that women were over the age of 25 with a BMI of more than or equal to 25 and less than 35, meaning those recruited were either overweight (BMI = 25.0 - 29.99) or obese (BMI = 30.0 - 34.99). Prospective participants were excluded if they were pregnant, planned to get pregnant within 2 months, had given birth in the past 9 months, were recently breast feeding, experienced or had experienced menopause, were recently participating in or planned to participate in a formal weight loss program within the next 2 months, had a physical disability or chronic condition that limited their ability to exercise or lose weight, had mental or cognitive disorders that would impede them from following instructions, or if they had eating or substance abuse disorders.

Procedures

Prescreening of participants was conducted to assess eligibility and interest of the participant, as well as inform them of the purpose and requirements of the study. Specifically, they were told about the baseline assessment and the four-week educational intervention. Those who expressed interest in the study were telephoned to complete a 10-15 minute prescreening assessment. If the participants were interested and eligible, they were asked to come to The Ohio State University campus at either the Psychology Building or the Martha Morehouse Pavilion. Since this study was conducted in an intervention trial, participants were recruited in three cohorts.

After the participant arrived at the research site objective measures were taken of weight, height, and waist circumference. Participants were given a packet of self-report questionnaires to complete, as well as a demographics/medical history form.

Measures

The objective measures included the BMI and waist measurement. Height (meters) and weight (kilograms) were used to calculate Body Mass Index, or BMI (kg/m^2). The waist was measured with the tape parallel to the floor between the lowest rib and top of the iliac crest.

The following self-report measures were completed:

Self-Efficacy Scale – Exercise (SES-E; Garcia & King, 1991).

With high internal reliability (alpha = 0.94) in this sample, the SES-E is a 16-item measure assessing the ability to exercise in stressful situations such as during or following a personal crisis (Resnick & Jenkins, 2000). Participants are asked to rate each item from 0% to 100% indicating how confident they feel they would exercise in various

situations. Scores are summed to calculate a mean score ranging from 0-100, with higher scores reflecting higher exercise self-efficacy.

Eating Self-Efficacy Scale (ESES; Glynn & Rudermann, 1986).

The reliability of this scale is high (alpha=0.93) for this sample. The ESES is comprised of 25 items with each item scaled from 1 (no difficulty) to 7 (most difficulty), and higher scores indicating lower eating self-efficacy. The scale includes two factors: eating due to negative affect, and eating when it is socially acceptable. The range of total scores is 25-175.

Impact of Weight on Quality of Life-Lite (IWQOL-L; Kolotkin, Crosby, Koloski, & Williams, 2001).

With a high Cronbach's alpha (0.93) in this sample, the IWQOL-L is a highly reliable scale (Kolotkin & Crosby, 2002). It consists of 31 items rated on a 5-point likert scale. Higher total scores reflect a higher weight-related impact on quality of life. Total scores can range from 31-155.

Medical Outcomes Survey, Short Form-36 (SF-36; Ware & Sherbourne, 1992).

The SF-36 is the most widely used measure of health-related QOL. It has been shown to have a Cronbach's alpha of 0.76-0.90 for its subscales, which reflects high reliability (Jenkinson, Wright, & Coulter, 1994). There are two composite scores that are generated from the survey, the mental component score (MCS) and the physical component score (PCS). T scores are created for component scores. The Cronbach's alphas for the scores in this study were .91 and .72, respectively.

Weight Bias Internalization Scale (WBIS; Durso & Latner, 2008).

There is adequate reliability in the WBIS, with a Cronbach's alpha of 0.81 in this sample (Durso & Latner, 2008). The WBIS includes 11 items, rated on a 7-point likert scale (1: strongly disagree to 7: strongly agree). It measures the degree to which the individual accepts anti-fat attitudes as a part of the self, with higher scores indicating more acceptance. Item 1 ("As an overweight person, I feel that I am just as competent as anyone") was removed to increase internal consistency, following the logic of Hilbert et al., 2014, resulting in a 10-item scale.

Social Impact Scale (SIS; Fife & Wright, 2000)

The SIS measures experiences of stigma and has 24 items; each rated on a 5-point likert scale (0=not applicable to 5=strongly agree). It was originally designed to assess the impact of stigma on those with chronic illnesses. This study changed 'illness' to 'condition' to make the items more applicable to this specific sample. The total score ranges from 0-96, with a higher scores reflecting more experienced stigma. The SIS had a Cronbach's alphas of .94 in this sample, reflecting high internal reliability (Fife & Wright, 2000).

Chronic Illness Anticipated Stigma Scale (CIASS; Earnshaw, Quinn, Kalichman, & Park, 2012).

Cronbach's alpha for the total score was 0.94 for this sample, which demonstrates high reliability (Earnshaw et al., 2012). This study modified the directions to reflect body weight concerns (e.g., '… because of your body weight') rather than illness-related concerns (e.g., '… because of your chronic illness'). The CIASS includes 12 items rated on a 5-point likert scale with 1 being very unlikely and 5 being very likely. It assesses the

degree to which a participant foresees facing a situation and/or experience where they are stigmatized, with higher scores reflecting more anticipated stigma.

Demographics and Medical History

The demographics and medical history form included sex, age, race, and current medications, to help characterize the sample for this study.

Data Analysis

Pearson correlations were used to evaluate the relationship between experienced weight stigma, anticipated weight stigma, and weight bias internalization and eating self-efficacy, exercise self-efficacy, and QOL. Hierarchical regression was used to assess the relationship of anticipated weight stigma and weight bias internalization with exercise self-efficacy, eating self-efficacy, and QOL while controlling for weight stigma. Statistical Analysis System (SAS) was used to assess all relationships in this study.

Results

Participants (n=44) were all female due to the design of the overarching study. The average age was 39, with an average BMI of 30.53 (Table 1). There were 31 white and 13 non-white participants.

Age, BMI, and education level, were not associated with experienced weight stigma, weight bias internalization, or anticipated stigma. In addition, these demographic variables were not associated with eating self-efficacy, exercise self-efficacy, or QOL measures ($p > .05$).

Experienced weight stigma was associated with exercise self-efficacy ($r = -.33$, $p < .05$), lower weight-related QOL ($r = .63$, $p < .001$), and the mental component score (MCS) of the SF-36 ($r = -.47$, $p < .05$), but not with eating self-efficacy ($p = .24$), or the

physical component score of the SF-36 (PCS) (p = .35). Anticipated weight stigma was correlated with exercise self-efficacy (r = -.35, p < .05), lower weight-related QOL (r = 35, p < .05), and mental QOL (r = -.44, p < .05), but was not associated with eating self-efficacy (p = .62), or physical QOL (p = .51). Weight bias internalization was associated with exercise self-efficacy (r = .-41, p < .05), eating self-efficacy (r = .39, p < .05), lower weight-related QOL (r = .72, p < .001), and mental QOL (r = -.51, p < .001), but not with physical QOL (p = .69)(Table 2).

Since experienced weight stigma was not associated with eating self-efficacy and physical QOL, no further regression analyses were conducted with eating self-efficacy or physical QOL as dependent variables. Weight bias internalization significantly predicted weight-related QOL, β = 0.55, t(41) = 3.84, p < .001. When controlling for experienced weight stigma, weight bias internalization predicted lower weight-related QOL, F(1, 41) = 14.77, p < .001, and trended toward predicting lower exercise self-efficacy, F(1, 41) = 3.19, p = .08, and poorer mental QOL, F(1, 41) = 3.81, p = .06 (Table 3).

When controlling for experienced weight stigma, anticipated weight stigma did not predict lower exercise self efficacy, F(1, 41) = 1.41, p = .24, lower weight-related quality of life, F(1, 41) = 1.02, p = .32, or poorer mental QOL, F(1, 41) = 1.38, p = .25 (Table 3).

Discussion

With obesity on the rise in the U.S., identifying strategies for treatment is imperative for the country (Flegal et al., 2012; Puhl & Heuer, 2009). Results of this study indicate experienced weight stigma and novel forms of stigma, anticipated weight stigma and weight bias internalization, are consistently associated with poorer functioning.

Replicating past studies, experienced weight stigma was associated with poorer health-related outcomes and QOL. Specifically, experienced weight stigma was positively correlated with lower weight-related QOL and negatively associated with mental quality of life. Experienced weight stigma was also found to be negatively associated with exercise self-efficacy, suggesting that as an obese or overweight individual experiences more weight-related stigma there is also a decreased perceived ability to exercise. Additionally, these results replicate past research on experienced weight stigma.

Weight bias internalization may suggest another direction for intervention. Internalizing weight-biased attitudes was associated with decreased self-efficacy for exercise and eating, lower weight-related QOL, and poorer mental QOL. Weight bias internalization was the only form of weight stigma associated with eating self-efficacy, suggesting that the internalization of weight stigma is linked with psychosocial concerns of eating. Not only was weight bias internalization associated with these negative behavioral outcomes, but it also more robustly predicted weight-related quality of life beyond experienced weight stigma. Thus, it seems that the mere act of endorsing weight biased attitudes like 'lazy' or 'unmotivated' is associated with a reduced weight-related QOL regardless of weight stigma experiences. Altogether, the findings above suggest that internalizing and endorsing weight stigma may be associated with negative behavioral outcomes related to obesity highlighting the importance of not focusing only on the experience of weight stigma but also on stigma-related beliefs.

Anticipated weight stigma, a relatively new concept in weight stigma research, was also associated with health-related outcomes. The construct was shown to be associated with poorer mental QOL, and lower weight-related QOL. Prior research found

that anticipated weight stigma has been associated with lower overall QOL, but this is the first study to document its association with weight-related QOL and mental QOL. These results provide a more detailed picture of the relationship between anticipating being stigmatized and QOL among obese and overweight individuals. Anticipated weight stigma was also associated with lower perceived ability to exercise. This finding indicates that the construct may have an impact on other psychosocial dimensions within the obese and overweight population. Thus, anticipated weight stigma seems relevant because even the expectation of being stereotyped is associated with negative beliefs about the self and poorer self-ratings or life quality.

Interestingly, no forms of stigma were associated with physical quality of life (QOL). It may be that there was a restricted range of PCS (physical component score) in this sample and that a wider range of PCS might be observed among more severe obesity (BMI > 35). Also, experienced weight stigma was not associated with eating self-efficacy. Past research has found that weight stigma is associated with with less control over dieting (Major, Hunger, Bunyan, & Miller, 2013), and binge-eating (Puhl & Heuer, 2009), so it would seem to follow that an overweight or obese individual's perceived ability to eat healthily would decrease as well, but this association was not found. It could be that an experience of weight stigma is only associated with a decrease in motivation to eat healthily, but not the perceived ability to do so. Similarly, anticipated weight stigma was not associated with eating self-efficacy. The anticipation of being stigmatized did not predict a unique amount of variance beyond experienced weight stigma in exercise self-efficacy, eating self-efficacy, weight-related QOL, physical QOL, and mental QOL. Thus, it seems that anticipated weight stigma and experienced weight stigma may be

similar concepts. Future research should test whether a higher BMI (above 35) could ascertain different results than these. Also, statistical power was limited by sample size. Therefore, weight bias internalization may have predicted both exercise self-efficacy and mental quality of life if there had been more participants in the study.

Currently, the gap in the literature on the subject of stigma prevents more in-depth analyses of these variables. More research needs to be conducted to develop a better understanding of how stigma impacts obesity and efforts at weight loss. Associations with a decrease in self-efficacy or motivation seem to suggest that stigma beliefs may prevent overweight and obese individuals from participating in healthy behaviors and, thus, may contribute to their health problems. Future research could study weight bias internalization and anticipated weight stigma in more complex ways like path analyses and controlled experiments, and evaluate cause-and-effect models (Pearl & Puhl, 2016).

Results of this study suggest that future interventions should not just target experienced weight stigma, but work on developing an intervention with a three-pronged approach attacking anticipation, internalization, and past experienced stigma all in one intervention. Typically, reduction strategies would focus on reducing the amount of stigma enacted upon overweight and obese individuals by targeting those who stigmatize. While there has been some success in this arena, it has not been enough to eradicate negative attitudes toward the obese (Puhl & Heuer, 2009). A more effective method may be to direct the reduction strategies at those being stigmatized. In other words, it may be easier to reduce internalization of weight stigma and protect against anticipation of stigma in the overweight and obese rather than trying to change society. Thus, strategies could look to reduce the internalization and anticipation of weight stigma by building

defense and coping mechanisms so overweight and obese populations do not endorse social stigmas associated with obesity such as being lazy, incompetent, and lacking in self-control. At the same time, educating the public on these topics is beneficial, so stereotypes linked to obesity are not endorsed by society. However, education cannot happen until more research is conducted on how all types of weight stigma affect the overweight and obese population.

Table 1

Means, standard deviation, maximum, and minimum values for all types of stigma, exercise self-efficacy, eating self-efficacy, and different types of QOL

Variable	Mean	Std Dev	Minimum	Maximum
Age	37.90	7.65	25.00	54.00
BMI	30.54	2.94	25.00	36.60
Eating self-efficacy	92.66	27.64	27.00	162.00
Weight-related QOL	61.66	16.91	34.00	114.00
Physical QOL	52.88	9.18	24.86	67.55
Mental QOL	39.92	11.08	19.72	57.13
Experienced Weight Stigma [SIS]	37.23	11.13	24.00	66.00
Anticipated Stigma	1.94	0.78	1.00	4.83
Weight Bias Internalization	4.29	1.17	2.20	6.70

Note. *$p < .05$, **$p < .001$. $N = 44$ for all analyses. BMI = Body Mass Index. QOL = Quality of Life. SIS = Social Impact Scale.

Table 2

Pearson correlations of stigma with demographics, exercise self-efficacy, eating self-efficacy, and QOL

	Age	BMI	Education	Exercise self-efficacy	Eating self-efficacy	Weight-related QOL	PCS	MCS
Experienced Weight Stigma	-0.12	-0.10	-0.23	-0.33*	0.18	0.63**	-0.14	-0.47*
Weight Bias Internalization	-0.10	-0.08	-0.10	-0.41*	0.39*	0.72**	-0.06	-0.51**
Anticipated Stigma	-0.10	0.08	-0.15	-0.35*	0.08	0.35*	-0.10	-0.44*

Note. *$p < .05$, **$p < .001$. $N = 44$ for all analyses. BMI = Body Mass Index; QOL = Quality of Life; PCS = Physical Component Score; MCS = Mental Component Score.

Table 3

Hierarchical regression analyses predicting exercise self-efficacy, weight-related QOL, and mental QOL from weight bias internalization and anticipated stigma, controlling for experienced weight stigma

	β	p	R^2	ΔR^2	Exercise Self-Efficacy
Step 1					
Experienced Weight Stigma	-0.09	0.63	0.109		
Step 2					
Weight Bias Internalization	-0.35	0.08	0.173	0.064	
Step 1					
Experienced Weight Stigma	-0.16	0.42	0.109		
Step 2					
Anticipated Stigma	-0.23	0.24	0.138	0.029	
	β	p	R^2	ΔR^2	Weight-related QOL
Step 1					
Experienced Weight Stigma	0.26	0.07	0.397		
Step 2					
Weight Bias Internalization	0.55	0.0004	0.557	0.16**	
Step 1					
Experienced Weight Stigma	0.75	< .0001	0.397		
Step 2					
Anticipated Stigma	-0.17	0.32	0.411	0.014	
	β	p	R^2	ΔR^2	Mental QOL
Step 1					
Experienced Weight Stigma	-0.23	0.22	0.217		
Step 2					
Weight Bias Internalization	-0.35	0.06	0.283	0.066	
Step 1					
Experienced Weight Stigma	-0.31	0.11	0.217		
Step 2					
Anticipated Stigma	-0.22	0.25	0.242	0.025	

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